This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-3 (Cancelled).

Claim 4 (New): An ultrasonic operation system comprising:

an ultrasonic transducer for generating ultrasonic oscillations to treat a living tissue;

a handpiece having a probe connected to said ultrasonic transducer for transmitting the ultrasonic oscillations generated by said ultrasonic transducer;

a driving signal oscillator including a frequency data input unit that inputs digital frequency data, and producing a driving signal, based on which said ultrasonic transducer is driven, according to said digital frequency data;

an amplification circuit for amplifying said driving signal and outputting the resultant driving signal to said ultrasonic transducer;

a detection circuit for detecting the phase of a voltage applied based on the driving signal to said ultrasonic transducer and the phase of a current induced with the voltage;

a phase comparison circuit for comparing a signal of the phase of the voltage with a signal of the phase of the current detected by said detection circuit to output a phase difference signal;

a data transfer circuit for transferring digital frequency initial data which is substantially the resonance frequency of said handpiece; and

an arithmetic circuit for varying the digital frequency initial data transferred from said data transfer circuit according to the phase difference signal from said phase comparison circuit,

wherein said arithmetic circuit counts the digital data according to the phase difference signal, calculates the digital data counted and the digital frequency initial data, and outputs the result of calculation to said frequency data input unit.

Claim 5 (New): An ultrasonic operation system according to Claim 4, further comprising:

a resonance frequency adjustment circuit for sweeping the frequency of said driving signal at the start of calculation of said digital frequency data so as have the frequency of said driving signal agree with the resonance frequency of said ultrasonic transducer; and

a control circuit for instructing said arithmetic circuit to set initial frequency data that represents a frequency different from the resonance frequency of said ultrasonic transducer; and to continue counting pulses until the digital frequency data represents the resonance frequency of said ultrasonic transducer.

Claim 6 (New): An ultrasonic operation system according to Claim 5, further comprising:

a detection circuit for detecting based on a phase difference between the voltage applied based on said driving signal to said ultrasonic transducer and the induced current whether the frequency of said driving signal has become equal to the resonance frequency of said ultrasonic transducer; and

a switching circuit for switching said resonance frequency adjustment circuit and said phase comparison circuit according to the result of detection performed by said detection circuit.

Claim 7 (New): An ultrasonic operation system according to Claim 5, further comprising:

a gain control amplifier and an output setting circuit for setting a gain to be produced by said gain control amplifier, which are interposed between said driving signal oscillator and said amplification circuit; and

a sequencer for successively controlling said gain control amplifier and said resonance frequency adjustment circuit.

Claim 8 (New): An ultrasonic operation system according to Claim 4, further comprising a memory circuit in which said digital frequency data representing the frequency of said driving signal attained when the phase of the voltage applied based on said driving signal matches the phase of the induced current is stored, wherein said arithmetic circuit loads said digital frequency data from said memory circuit at the start of calculation of said digital frequency data.

Claim 9 (New): An ultrasonic operation system according to Claim 4, further comprising a second arithmetic circuit interposed between said phase comparison circuit and said arithmetic circuit, wherein said second arithmetic circuit includes a data converter that converts the result of comparison performed by said phase comparison circuit into frequency change data, and averages a plurality of said frequency change data acquired time-sequentially.

Claim 10 (New): An ultrasonic operation system according to Claim 9, further comprising an action control circuit for controlling the action of said second arithmetic circuit according to said digital frequency data fed to said driving signal oscillator.

Claim 11 (New): An ultrasonic operation system comprising:

an ultrasonic transducer that generate ultrasonic oscillations to treat a living tissue;

a handpiece having a probe connected to said ultrasonic transducer for transmitting the ultrasonic oscillations generated by said ultrasonic transducer;

a connector through which said handpiece is connected;

a discrimination circuit for discriminating the handpiece connected through said connector;

a driving signal oscillator including a frequency data input unit that inputs digital frequency data, and producing a driving signal, based on which said ultrasonic transducer is driven, according to said digital frequency data;

an amplification circuit for amplifying the driving signal and outputting the resultant driving signal to said ultrasonic transducer via said connector;

a detection circuit for detecting the phase of a voltage applied based on the driving signal to said ultrasonic transducer and the phase of a current induced with the voltage;

a phase comparison circuit for comparing a signal of the phase of the voltage with a signal of the phase of the current detected by said detection circuit to output a phase difference signal;

an initial frequency data setting circuit for outputting digital frequency initial data which is substantially the resonance frequency of the handpiece connected, according to the result of discrimination performed by said discrimination circuit; and

an arithmetic circuit for varying the digital frequency initial data outputted from said initial frequency data setting circuit according to the phase difference signal from said phase comparison circuit,

wherein said arithmetic circuit counts the digital data according to the phase difference signal, calculates the digital data counted and the digital frequency initial data, and outputs the result of said calculation to said frequency data input unit.

Claim 12 (New): An ultrasonic operation system according to Claim 11, wherein said handpiece includes a memory means in which initial frequency data associated with said ultrasonic transducer is stored, and said arithmetic circuit adds the initial frequency data to the digital frequency data.